

Serial No. 10/675,109

134082-1

Listing of the Claims

This listing of claims will replace all prior versions, and listings, of claims in this application. Please amend the claims as follows:

Claims 1. – 12. (cancelled)

Claim 13. (currently amended) A method of recovering hydrogen comprising:
contacting a compound comprising a carbide in hydrogen to form a hydrogenated compound, wherein the compound is Al_4C_3 , ~~Na_4C_3~~ , ~~Li_4C_3~~ , ~~K_4C_3~~ , ~~LiC~~ , ~~LiC_6~~ , Mg_2C_3 , MgC_2 , AlTi_2C , AlTi_3C , AlZrC_2 , $\text{Al}_3\text{Zr}_5\text{C}$, $\text{Al}_3\text{Zr}_2\text{C}_4$, $\text{Al}_3\text{Zr}_2\text{C}_7$, ~~KC_4~~ , ~~NaC_4~~ , or a combination comprising at least one of the foregoing carbides; and
heating the hydrogenated compound to recover the hydrogen.

Claim 14. (original) The method of Claim 13, wherein the heating is conducted using microwave radiation, convectional heating, electrical resistive heating, or a combination comprising at least one of the foregoing methods of heating.

Claim 15. (original) The method of Claim 13, further adding a dopant comprising titanium, vanadium zirconium, yttrium, lanthanum, nickel, manganese, cobalt, silicon, gallium, germanium, and the elements from the lanthanide series to the compound in an amount of less than or equal to about 20 wt% of the compound.

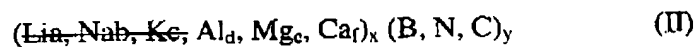
Claim 16. (original) The method of Claim 13, wherein the heating is effected by the heat from the exhaust of a fuel cell.

Claims 17. (cancelled)

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Claim 18. (currently amended) A method of recovering hydrogen comprising:
contacting a diffusion multiple having compounds of the formula (II) in hydrogen
to form a hydrogenated compound



where ~~Li is lithium, Na is sodium, K is potassium, Ca is~~ calcium, Al is aluminum; B is boron, C is carbon and N is nitrogen; ~~a, b, c, d, e and f may~~ be the same or different and have values from 0 to 1; and x and y have values of about 1 to about 22; and heating the hydrogenated diffusion multiple to recover the hydrogen.

Claims 19-30. (Cancelled)